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FIRELESS COOKING.

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THE applications of science in the common economies of life are revolutionizing many of our philosophies, as well as methods of doing things. The former is seen very noticeably in the curricula of our schools, in the multiplication of elective courses, and in the laboratory methods of teaching, and in estimating the value of education on a commercial basis. A marked instance of this tendency may be found in the teeming publications of the Department of Agriculture in Washington.

Schools of agriculture and experiment stations are established in all the states, and scientific investigation is instituted in everything relating to utilizing the forces of nature in growing food plants, in winning mineral products, and in the preparation required to bring these things to a condition for the use and service of man. "Breeding to points," both in animal and plant reproduction, is accomplishing results that border on the marvelous. Who can foresee the limits of cross-breeding in the hands of such a skilful manipulator as Burbank?

The discussion of these questions, great and important though they be, is not the object of this paper, but rather another application of science, appealing to our most personal needs in the preparation of food for our tables. This is the criterion by which we classify men as savage, barbarian, half-civilized, civilized and enlightened, according to nomenclature of the old geographies. There is a wide difference between the larder of a savage and a Parisian cafe, and perhaps in neither of these is the right way of living best found. The essential idea of cooking, both etymologically and in common use, is the preparation of food by heat, so as to make it both more palatable and better adapted to nutrition. Heat is usually associated with fire, and therefore when we speak of a "fireless cooker," it seems like the play of Hamlet with Hamlet left out. By heat we bring our viands into a condition so that they are more easily broken up by chewing and made ready for the processes of digestion. Not only this, but the cooking effects other changes.

The carbohydrates, in the form of starch-grains, are broken open and in some cases converted into dextrin, and so rendered soluble by the gastric fluids. The fats, the proteids and many of the mineral constituents are dissolved and made ready for purposes of nutrition. The degree of heat required to effect these objects will vary, and is generally somewhat less for albuminous substances than for starch-grains; but in most cases is several degrees under 212 F. The presence of water greatly aids the reactions and time must be allowed to reach complete results.

The temperature, then, of boiling water, will give us heat enough, and all that is essential to cooking is to conserve this temperature by preventing the escape of heat. This is simply and easily done by enclosing the vessel, that has been brought to the boiling point over the open fire, into a box of some kind, lined with a non-conducting material, and the cooking will then be fully effected without further application of heat and without further care or trouble.

The Norwegian cooker is simply an apparatus of this kind and has been in use for many years. The wonder is that it has not been brought into more general use. Our army posts have lately been experimenting with it on an extensive scale and demonstrating its great convenience and economy. The cheerless, unpalatable ration of the bivouac is greatly improved and the health and spirits of the soldiers correspondingly benefited thereby.

There is an endless variety in these cooking-boxes, and even a small degree of ingenuity and machanical skill will suffice to make an efficient cooker. The essential thing is the lining of the box, and some material must be chosen with abundance of closed air spaces. There is no non-conductor better than confined air, and so our lining should be porous, as we say, just as we find the same kind of material necessary in our refrigerators. In these it is our object to keep the heat out, but in the cooker we must keep it in. The difference between the outside and inside temperatures is commonly much greater in the cooker than in the refrigerator, but the time we find it necessary to maintain this difference is in the latter longer and generally quite indefinite, while in the cooker a few hours is all that is needed. Of the various materials for lining the cooker, loose felt has been much employed, and is perhaps as efficient as anything. Sawdust, excelsior, charcoal, cotton, wool, loose paper, rags, feather cushions, and hay or straw have been used. Whatever is chosen, it should be remembered that many of the conditions inside the cooker are favorable to germ development, and whatever lining we select should be a material capable of easy removal and cleansing. The advisability of a substance like hay may be doubted. which has little to recommend it except cheapness, and of all substances it makes the best culture for bacteria. Among the advantages of the fireless cooker may be enumerated the following:

First. It gives a long and even heat to food like cereals, that require more time than is usually given over an open fire, and the products come out of the cooker better done and more palatable. The same is true of meats, and in these we find the cheaper cuts prepared in the cooker are fully equal to the more expensive ones cooked in the old way. This will often make a saving of one-half on the costliest item on our tables.

Second. The economy of labor is greatly promoted. In the breakfast the housewife anticipates the other meals and will have her viands cooked so that very little further preparation is needed. Her time will then be more free for other occupation than the everlasting drudgery of the kitchen.

Third. There is no danger of burning food on the fireless cooker. The scorched saucepan, the spoiled food, the ruffled feelings, are alike avoided.

Fourth. Economy of fuel is a considerable item. When the food has gone into the cooker the fire in the range may be allowed to go out, and in the summer time it relieves the house of heat introduced by constant fires in the kitchen.

Fifth. In ordinary cooking, with the escaping steam unpleasant odors often pass off, filling the house, and it will certainly be an advantage to have our dinner of cabbage and onions without advertising the fact to our neighbors.

Sixth. The principles of the fireless cooker may be very profitably applied in preparation of food for stock. All that would be needed for this is a sufficiently large vat of wood, or other material, enclosed in a jacket of non-conducting material, and when the vegetables or grains to be cooked are heated to boiling and emptied into the vat this is tightly closed, covered to prevent radiation, and the cooking goes on to completion without further application of heat.

Finally, it may be said that in this very elementary application of science we have an amelioration of labor and expense in one of the commonest and most necessary functions of living.

The fireless cooker will not necessarily make a good cook, nor insure sumptuous viands for our tables. Just as a celebrated painter advised his pupils to mix their colors with brains, so must the kitchen artist use mind as well as muscle.